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FIG.1

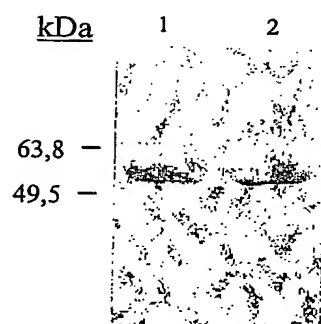
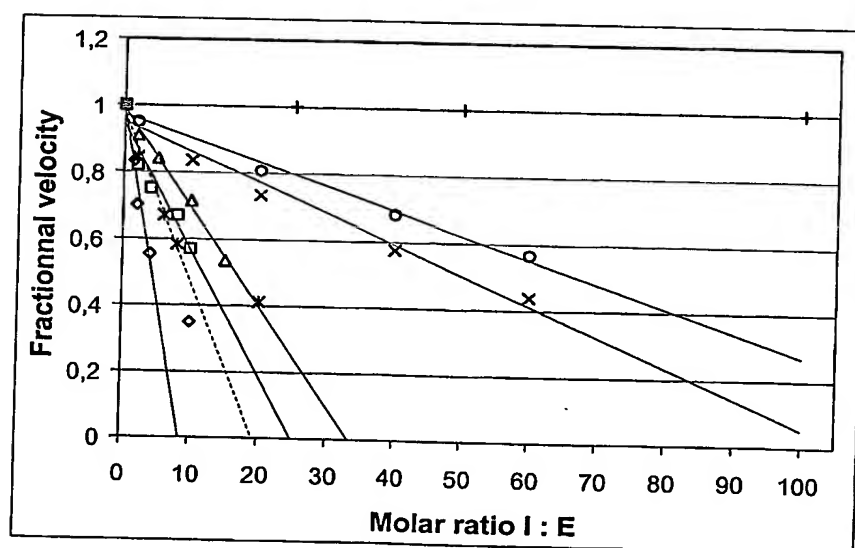


FIG.2



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FIG. 3

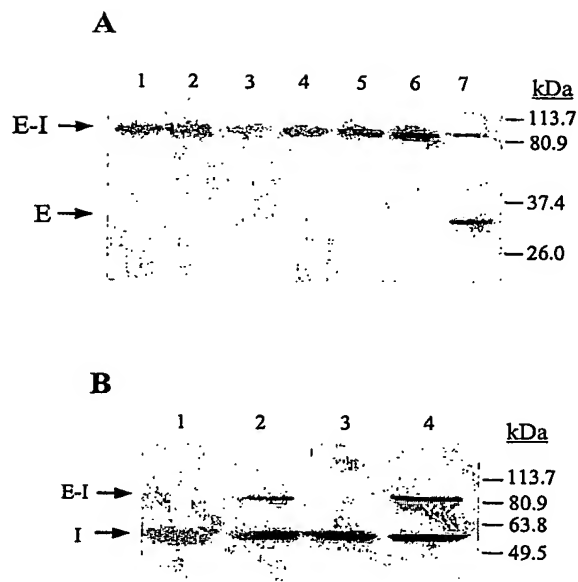
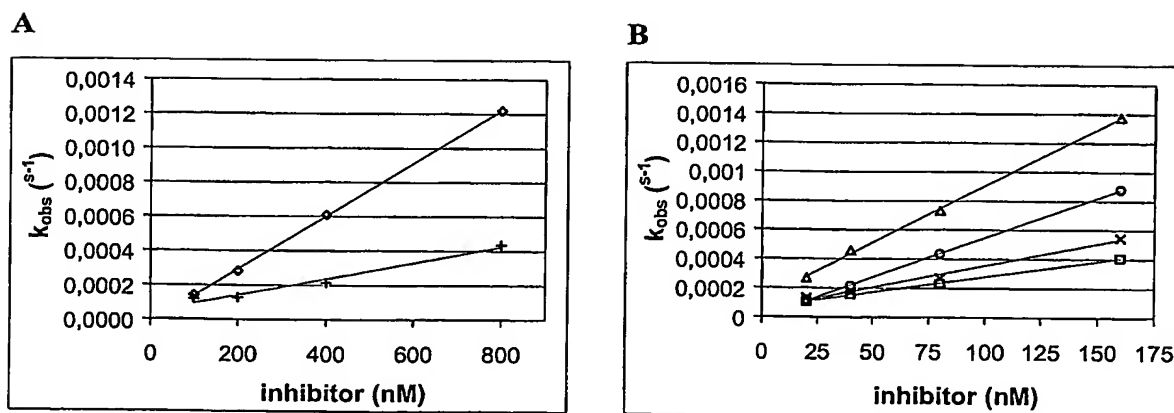


FIG. 4



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FIG. 5

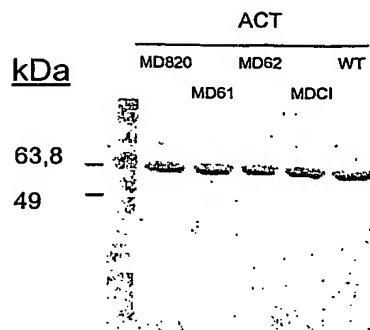
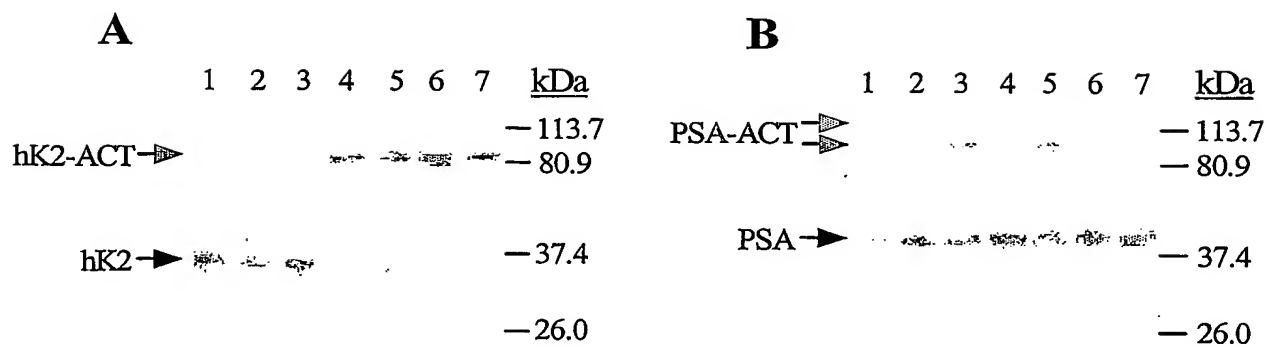


FIG. 6



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FIG. 7A

*Italic* : start codon ATG

**Bold** : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

**DNA Sequence ACT variants : MD 820**

**SEQ ID N°1**

*ATG*GAGAGGATCCCATCACCATCACCATCACTCTAGACACCCTAACAGCCCACTTGACGAGGAGA  
ATCTGACCCAGGAGAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT  
GGACTTCGCTTTCAGCCTGTACAAGCAGTTAGTCCTGAAGGCCCTGATAAGAATGTCATCTTC  
TCCCCACTGAGCATCTCCACCGCCTTGGCCTTCCTGTCTCTGGGGGCCCATATAACCACCCTGA  
CAGAGATTCTCAAAGGCCTCAAGTTCAACCTCACGGAGACTTCTGAGGCAGAAATTCACCAGAG  
CTTCCAGCACCTCCTGCGCACCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGGGAAAT  
GCCATGTTTGTCAAAGAGCAACTCAGTCTGCTGGACAGGTTACGGAGGATGCCAAGAGGCTGT  
ATGGCTCCGAGGCCTTTGCCACTGACTTTCAGGACTCAGCTGCAGCTAAGAAGCTCATCAACGA  
CTACGTGAAGAATGGAAGTAGGGGGAAAATCACAGATCTGATCAAGGACCTTGACTCGCAGACA  
ATGATGGTCTGTTGAATTACATCTTCTTTAAAGCCAAATGGGAGATGCCCTTTGACCCCCAAG  
ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAAGTGGGTAATGGTGCCCATGATGAGTTT  
GCATCACCTGACTATACCTTACTTCCGGGACGAGGAGCTGTCTCTGCACCGTGGTGGAGCTGAAG  
TACACAGGCAATGCCAGCGCACTCTTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGGGAAG  
CCATGCTGCTCCAGAGACCCTGAAGCGGTGGAGAGACTCTCTGGAGTTCAGAGAGATAGGTGA  
GCTCTACCTGCCAAAGTTTTTCATCTCGAGGGACTATAACCTGAACGACATACTTCTCCAGCTG  
GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG  
CAGTCTCCAGGTGGTCCATAAGGCTGTGCTTGATGTATTTGAGGAGGGGCACAGAAGCATCTGC  
TGCCACCGCGGTCAAATCACCCTCCGTTCTCGAGCAGTGGAGACGCGTACCATTGTGCGTTTC  
AACAGGCCCTTCTGATGATCATTTGTCCCTACAGACACCCAGAACATCTTCTTCATGAGCAAAG  
TCACCAATCCCAAGCAAGCCTAA

**Protein Sequence ACT variants : MD 820**

**SEQ ID N°2**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF  
SPLSISTALAFSLSLGAHNNTLLEILKGLKFNLTETSEAEIHQSFOHLLRTLNQSSDELQLSMGN  
AMFVKEQLSLLDRFTEDAKRLYGSEAFATDFQDSAAAKKLINDYVKNGTRGKITDLIKDLDST  
MMVLVNYIFFKAKWEMPFPDQDTHQSRFYLSKKKWVMPMMSLHHLTIPIYFRDEELSCTVVELK  
YTGNASALFILPDQDKMEEVEAMLLPETLKRWRDSLEFREIGELYLPKFSISRDNLDILLQL  
GIEEAFTSKADLSGITGARNLAVSQVVHKAVALDVFEEGTEASAATAVKITLRSRAVETRTIVRF  
NRPFLMIIVPTDTQNIFFMSKVTNPKQA\*

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FIG. 7B

Italic : start codon ATG

Bold : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

**DNA Sequence ACT variant : MD 62****SEQ ID N°3**

*ATG*GAGAGGATCCCATCACCATCACCATCACTCTAGACACCCTAACAGCCCACCTTGACGAGGAGA  
ATCTGACCCAGGAGAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT  
GGACTTCGCTTTCAGCCTGTACAAGCAGTTAGTCCTGAAGGCCCTGATAAGAATGTCATCTTC  
TCCCCACTGAGCATCTCCACCGCCTTGGCCTTCCTGTCTCTGGGGGCCATAATACCACCCTGA  
CAGAGATTCTCAAAGGCCTCAAGTTCAACCTCACGGAGACTTCTGAGGCAGAAATTCACCAGAG  
CTTCCAGCACCTCCTGCGCACCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGGGAAAT  
GCCATGTTTGTCAAAGAGCAACTCAGTCTGCTGGACAGGTTACGGAGGATGCCAAGAGGCTGT  
ATGGCTCCGAGGCCTTTGCCACTGACTTTCAGGACTCAGCTGCAGCTAAGAAGCTCATCAACGA  
CTACGTGAAGAATGGAAGTAGGGGGAAAATCACAGATCTGATCAAGGACCTTGACTCGCAGACA  
ATGATGGTCCTGGTGAATTACATCTTCTTTAAAGCCAAATGGGAGATGCCCTTTGACCCCCAAG  
ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAAGTGGGTAATGGTGCCCATGATGAGTTT  
GCATCACCTGACTATACTTACTTCCGGGACGAGGAGCTGTCTGCACCGTGGTGGAGCTGAAG  
TACACAGGCAATGCCAGCGCACTCTTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGAAG  
CCATGCTGCTCCAGAGACCCTGAAGCGGTGGAGAGACTCTCTGGAGTTCAGAGAGATAGGTGA  
GCTCTACCTGCCAAAGTTTTTCATCTCGAGGGACTATAACCTGAACGACATACTTCTCCAGCTG  
GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG  
CAGTCTCCCAGGTGGTCCATAAGGCTGTGCTTGATGTATTTGAGGAGGGCACAGAAGCATCTGC  
TGCCACCGCGGTCAAATCACCAGGAGGTCTATCGATGTGGAGACGCGTACCATTGTGCGTTTC  
AACAGGCCCTTCTGATGATCATTGTCCCTACAGACACCCAGAACATCTTCTTCATGAGCAAAG  
TCACCAATCCCAAGCAAGCCTAA

**Protein Sequence ACT variant : MD 62****SEQ ID N°4**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF  
SPLSISTALAFSLSLGAHNNTLLEILKGLKFNLTETSEAEIHQS FQHLLRTL NQSSDELQLSMGN  
AMFVKEQLSLLDRFTEDAKRLYGSEAFATDFQDSAAAKKLINDYVKNGTRGKITDLIKDLDSQT  
MMVLVNYIFFKAKWEMPFPDQDTHQSRFYLSKKKWVMPMMSLHHLTIPYFRDEELSCTVVELK  
YTGNASALFILPDQDKMEEVEAMLLPETLKRWRDSLEFREIGELYLPKFSISRDNLDNDILLQL  
GIEEAFTSKADLSGITGARNLAVSQVVHKAVLDFEEGTEASAATAVKITRRSIDVETRTIVRF  
NRPFLMIIVPTDTQNIFFMSKVTPKQA\*

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FIG. 7C

Italic : start codon ATG

Bold : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

**DNA Sequence ACT variant : MD 83****SEQ ID N°5**

*ATG*GAGAGGATCCCATCACCATCACCATCACTCTAGACACCCTAACAGCCCACCTTGACGAGGAGA  
ATCTGACCCAGGAGAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT  
GGACTTCGCTTTCAGCCTGTACAAGCAGTTAGTCCTGAAGGCCCTGATAAGAATGTCATCTTC  
TCCCCACTGAGCATCTCCACCGCCTTGGCCTTCCTGTCTCTGGGGGCCATAATACCACCCTGA  
CAGAGATTCTCAAAGGCCTCAAGTTCAACCTCACGGAGACTTCTGAGGCAGAAATTCACCAGAG  
CTTCAGCACCTCCTGCGCACCCCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGGGAAAT  
GCCATGTTTGTCAAAGAGCAACTCAGTCTGCTGGACAGGTTACGGAGGATGCCAAGAGGCTGT  
ATGGCTCCGAGGCCTTTGCCACTGACTTTCAGGACTCAGCTGCAGCTAAGAAGCTCATCAACGA  
CTACGTGAAGAATGGAAC TAGGGGGAAAATCACAGATCTGATCAAGGACCTTGACTCGCAGACA  
ATGATGGTCTGCTGAATTACATCTTCTTTAAAGCCAAATGGGAGATGCCCTTTGACCCCAAG  
ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAAGTGGGTAATGGTGCCCATGATGAGTTT  
GCATCACCTGACTATACCTTACTTCCGGGACGAGGAGCTGTCTGACCGTGCTGGAGCTGAAG  
TACACAGGCAATGCCAGCGCACTCTTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGGAAG  
CCATGCTGCTCCAGAGACCCTGAAGCGGTGGAGAGACTCTCTGGAGTTCAGAGAGATAGGTGA  
GCTCTACCTGCCAAAGTTTTCCATCTCGAGGGACTATAACCTGAACGACATACTTCTCCAGCTG  
GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG  
CAGTCTCCAGGTGGTCCATAAGGCTGTGCTTGATGTATTTGAGGAGGGCACAGAAGCATCTGC  
TGCCACCGCGGTCAAAATCAGGGGGA~~GATCTGAGTTAGTGGAGACGCGTACCATTGTGCGTTTC~~  
AACAGGCCCTTCCTGATGATCATTTGTCCCTACAGACACCCAGAACATCTTCTTCATGAGCAAAG  
TCACCAATCCCAAGCAAGCCTAA

**Protein Sequence ACT variant : MD 83****SEQ ID N°6**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF  
SPLSISTALAFSLGAHNNTLLEILKGLKFNLTETSEAEIHQS FQHLLRTL NQSSDELQLSMGN  
AMFVKEQLSLLDRFTEDAKRLYGSEAFATDFQDSAAAKKLINDYVKNGTRGKITDLIKDLDSQT  
MMVLVNYIFFKAKWEMPFPDQDTHQSRFYLSKKKWVMPMMSLHHLTIPYFRDEELSCTVVELK  
YTGNASALFILPDQDKMEEVEAMLLPETLKRWRDSLEFREIGELYLPKFSISR DYNLNDILLQL  
GIEEAFTSKADLSGITGARNLAVSQVVHKAVLDVFEEGTEASAATAVKIRGRSELVETRTRIVRF  
NRPFLMIIVPTDTQNIFFMSKVTNPKQA\*

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FIG. 7D

Italic : start codon ATG

Bold : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

**DNA Sequence ACT variant : MD 67**

**SEQ ID N°7**

*ATG*GAGAGGATCCCATCACCATCACCATCACTCTAGACACCCTAACAGCCCACTTGACGAGGAGA  
ATCTGACCCAGGAGAAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT  
GGACTTCGCTTTCAGCCTGTACAAGCAGTTAGTCCTGAAGGCCCTGATAAGAATGTCATCTTC  
TCCCCATGAGCATCTCCACCGCCTTGGCCTTCCTGTCTCTGGGGGCCCATATAACCACCCTGA  
CAGAGATTCTCAAAGGCCTCAAGTTCAACCTCACGGAGACTTCTGAGGCAGAAATTCACCAGAG  
CTTCAGCACCTCCTGCGCACCCCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGGGAAAT  
GCCATGTTTGTCAAAGAGCAACTCAGTCTGCTGGACAGGTTACGGAGGATGCCAAGAGGCTGT  
ATGGCTCCGAGGCCTTTGCCACTGACTTTCAGGACTCAGCTGCAGCTAAGAAGCTCATCAACGA  
CTACGTGAAGAATGGAAGTAGGGGGGAAAATCACAGATCTGATCAAGGACCTTGACTCGCAGACA  
ATGATGGTCCTGGTGAATTACATCTTCTTTAAAGCCAAATGGGAGATGCCCTTTGACCCCCAAG  
ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAAGTGGGTAATGGTGCCCATGATGAGTTT  
GCATCACCTGACTATACCTTACTTCCGGGACGAGGAGCTGTCTGCACCGTGGTGGAGCTGAAG  
TACACAGGCAATGCCAGCGCACTCTTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGGAAG  
CCATGCTGCTCCAGAGACCCTGAAGCGGTGGAGAGACTCTCTGGAGTTCAGAGAGATAGGTGA  
GCTCTACCTGCCAAAGTTTTCATCTCGAGGGACTATAACCTGAACGACATACTTCTCCAGCTG  
GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG  
CAGTCTCCAGGTGGTCCATAAGGCTGTGCTTGATGTATTTGAGGAGGGGCACAGAAGCATCTGC  
TGCCACCGCGGTCAAAATCAAGCTTAGAACCAACATTAGTGGAGACGCGTACCATTGTGCGTTTC  
AACAGGCCCTTCCTGATGATCATTTGTCCCTACAGACACCCAGAACATCTTCTTCATGAGCAAAG  
TCACCAATCCCAAGCAAGCCTAA

**Protein Sequence ACT variant: MD 67**

**SEQ ID N°8**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF  
SPLSISTALAFSLGAHNNTTLTEILKGLKFNLTETSEAEIHQS FQHLLRTL NQSSDELQLSMGN  
AMFVKEQLSLLDRFTEDAKRLYGSEAFATDFQDSAAAKKLINDYVKN GTRGKITDLIKDLD SQT  
MMVLVNYIFFKAKWEMPFPDQDTHQSRFYLSKKKWVMVPMMSLHHLTIPYFRDEELSCTVVELK  
YTGNASALFILPDQDKMEEVEAMLLPETLKRWRDSLEFREIGELYLPKFSISR DYNLNDILLQL  
GIEEFTSKADLSGITGARNLAVSQVVHKAVLDVFEEGTEASAATAVKIKLRTTLVETR TIVRF  
NRPF LMIIVPTDTQNIFFMSKVTPKQA\*

Underlined and grey : DNA sequence encoding RSL mutation.

**DNA Sequence ACT variant : MD 61**

**SEQ ID N°9**

ATGAGAGGATCCCATCACCATCACCATCACTCTAGACACCCTAACAGCCCACCTTGACGAGGAGA  
ATCTGACCCAGGAAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT  
GGACTTCGCTTTCAGCCTGTACAAGCAGTTAGTCCTGAAGGCCCTGATAAGAATGTCATCTTC  
TCCCCACTGAGCATCTCCACCGCCTTGGCCTTCTGTCTCTGGGGGCCCATATAACCACCCTGA  
CAGAGATTCTCAAAGGCCTCAAGTTCAACCTCACGGAGACTTCTGAGGCAGAAATTACCAGAG  
CTTCCAGCACCTCCTGCGCACCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGGGAAAT  
GCCATGTTTGTCAAAGAGCAACTCAGTCTGCTGGACAGGTTACCGGAGGATGCCAAGAGGCTGT  
ATGGCTCCGAGGCCTTTGCCACTGACTTTCAGGACTCAGCTGCAGCTAAGAAGCTCATCAACGA  
CTACGTGAAGAATGGAAGTGGGGGAAAATCACAGATCTGATCAAGGACCTTGACTCGCAGACA  
ATGATGGTCTCTGGTGAATTACATCTTCTTTAAAGCCAAATGGGAGATGCCCTTTGACCCCCAAG  
ATACTCATCAGTCAAGGTTCTACTTTGAGCAAGAAAAAGTGGGTAAATGGTGCCCATGATGAGTTT  
GCATCACCTGACTATACCTTACTTCCGGGACGAGGAGCTGTCTTGACCCGTGGTGGAGCTGAAG  
TACACAGGCAATGCCAGCGCACTTTCATCTCCTTGATCAAGACAAGATGGAGGAAGTGGAAG  
CCATGCTGCTCCCAGAGACCCTGAAGCGGTGGAGAGACTCTCTGGAGTTCAGAGAGATAGGTGA  
GCTCTACCTGCCAAAGTTTTCCATCTCGAGGGACTATAACCTGAACGACATACTTCTCCAGCTG  
GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG  
CAGTCTCCCAGGTGGTCCATAAGGCTGTGCTTGATGTATTTGAGGAGGGCACAGAAGCATCTGC  
TGCCACCGCGGTCAAATCATGACAAGATCTAACGCAGTGGAGACGCGTACCATTGTGCGTTTC  
AACAGGCCCTTCTGATGATCATTTGTCCCTACAGACACCCAGAACATCTTCTTCATGAGCAAAG  
TCACCAATCCCAAGCAAGCCTAA

**Protein Sequence ACT variant : MD 61**

**SEQ ID N°10**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF  
SPLSISTALAFSLSLGAHNTTLTEILKGLKFNLTETSEAEIHQSFOHLLRTLNQSSDELQLSMGN  
AMFVKEQLSLLDRFTEDAKRLYGSEAFATDFQDSAAAKKLINDYVKNNGTRGKITDLIKDLSQT  
MMVLVNYIFFKAKWEMPFDPDQTHQSRFYLSKKKWVMPMMSLHHLTIPYFRDEELSCTVVELK  
YTGNASALFILPDQDKMEEVEAMLLPETLKRWRDSLEFREIGELYLPKFSISRDNLNDILLQL  
GIEEFTSKADLSGITGARNLAVSQVVHKAVLDVFEEGTEASAATAVKIMTRSNAVETRTIVRF  
NRPFMLMIVPTDTQNIFFMSKVTPKQA\*



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FIG. 7F

*Italic* : start codon ATG

**Bold** : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

### **DNA Sequence ACT variants : MD 518**

#### **SEQ ID N°11**

*ATG*GAGAGGATCCCATCACCATCACCATCACTCTAGACACCCTAACAGCCCACTTGACGAGGAGA  
 ATCTGACCCAGGAGAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT  
 GGACTTCGCTTTCAGCCTGTACAAGCAGTTAGTCTGAAGGCCCTTGATAAGAATGTCATCTTC  
 TCCCCACTGAGCATCTCCACCGCCTTGGCCTTCTGTCTCTGGGGGCCATAATACCACCCTGA  
 CAGAGATTCTCAAAGGCCTCAAGTTC AACCTCACGGAGACTTCTGAGGCAGAAATTCACCAGAG  
 CTTCCAGCACCTCCTGCGCACCCCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGGGAAAT  
 GCCATGTTTGTCAAAGAGCAACTCAGTCTGCTGGACAGGTTACGGAGGATGCCAAGAGGCTGT  
 ATGGCTCCGAGGCCTTTGCCACTGACTTTCAGGACTCAGCTGCAGCTAAGAAGCTCATCAACGA  
 CTACGTGAAGAATGGAAGTAGGGGAAAATCACAGATCTGATCAAGGACCTTGACTCGCAGACA  
 ATGATGGTCCTGGTGAATTACATCTTCTTTAAAGCCAAATGGGAGATGCCCTTTGACCCCCAAG  
 ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAAGTGGGTAATGGTGCCCATGATGAGTTT  
 GCATCACCTGACTATACCTTACTTCCGGGACGAGGAGCTGTCTGACCCGTGGTGGAGCTGAAG  
 TACACAGGCAATGCCAGCGCACTCTTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGGAAG  
 CCATGCTGCTCCCAGAGACCCTGAAGCGGTGGAGAGACTCTCTGGAGTTCAGAGAGATAGGTGA  
 GCTCTACCTGCCAAAGTTTTCCATCTCGAGGGACTATAACCTGAACGACATACTTCTCCAGCTG  
 GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG  
 CAGTCTCCCAGGTGGTCCATAAGGCTGTGCTTGATGTATTTGAGGAGGGGCACAGAAGCATCTGC  
 TGCCACCGCGGTCAAAATCACCGAGCGTGTCTCGCCCGTGGAGACGCGTACCATTGTGCGTTTC  
 AACAGGCCCTTCCTGATGATCATTGTCCCTACAGACACCCAGAACATCTTCTTCATGAGCAAAG  
 TCACCAATCCCAAGCAAGCCTAA

### **Protein Sequence ACT variants: MD 518**

#### **SEQ ID N°12**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF  
 SPLSISTALAFSLGAHNNTTLTEILKGLKFNLTETSEAEIHQS FQHLLRTL NQSSDELQLSMGN  
 AMFVKEQLSLLDRFTEDAKRLYGSEAFATDFQDSAAAKKLINDYVKNNGTRGKITDLIKDLSQT  
 MMVLVNYIFFKAKWEMPFPDQDTHQSRFYLSKKKWVMPMMSLHHLTI PYFRDEELSCTVVELK  
 YTGNASALFILPDQDKMEEVEAMLLPETLKRWRDSLEFREIGELYLPKFSISR DYNLNDILLQL  
 GIEEAFTSKADLSGITGARNLAVSQVVHKA VLDVFEEGTEASAATAVKIT ERVSE VETR TIVRF  
 NRPF LMIIVPTDTQNIFFMSKVTPNQQA\*

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FIG. 7G

*Italic* : start codon ATG

**Bold** : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

**DNA Sequence ACT variants : MDCI**

**SEQ ID N°13**

*ATG*GAGAGGATCCCATCACCATCACCATCACTCTAGACACCCTAACAGCCCACTTGACGAGGAGA  
ATCTGACCCAGGAGAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT  
GGACTTCGCTTTCAGCCTGTACAAGCAGTTAGTCCTGAAGGCCCTGATAAGAATGTCATCTTC  
TCCCCACTGAGCATCTCCACCGCCTTGCGCTTCCTGTCTCTGGGGGCCCATAATACCACCCTGA  
CAGAGATTCTCAAAGGCCTCAAGTTCAACCTCACGGAGACTTCTGAGGCAGAAATTCACCAGAG  
CTTCCAGCACCTCCTGCGCACCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGGGAAAT  
GCCATGTTTGTCAAAGAGCAACTCAGTCTGCTGGACAGGTTACGGAGGATGCCAAGAGGCTGT  
ATGGCTCCGAGGCCTTTGCCACTGACTTTCAGGACTCAGCTGCAGCTAAGAAGCTCATCAACGA  
CTACGTGAAGAATGGAAGTAGGGGGAAAATCACAGATCTGATCAAGGACCTTGACTCGCAGACA  
ATGATGGTCCTGGTGAATTACATCTTCTTTAAAGCCAAATGGGAGATGCCCTTTGACCCCCAAG  
ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAAGTGGGTAATGGTGCCCATGATGAGTTT  
GCATCACCTGACTATACCTTACTTCCGGGACGAGGAGCTGTCTGCACCGTGGTGGAGCTGAAG  
TACACAGGCAATGCCAGCGCACTCTTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGGAAG  
CCATGCTGCTCCCAGAGACCCTGAAGCGGTGGAGAGACTCTCTGGAGTTCAGAGAGATAGGTGA  
GCTCTACCTGCCAAAGTTTTCCATCTCGAGGGACTATAACCTGAACGACATACTTCTCCAGCTG  
GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG  
CAGTCTCCAGGTGGTCCATAAGGCTGTGCTTGATGTATTTGAGGAGGGCACAGAAGCATCTGC  
TGCCACCGCGGTCAAATCACCTTTAGATCTGCATTAGTGGAGACGCGTACCATTGTGCGTTTC  
AACAGGCCCTTCTGATGATCATTTGTCCCTACAGACACCCAGAACATCTTCTTCATGAGCAAAG  
TCACCAATCCCAAGCAAGCCTAA

**Protein Sequence ACT variants: MD CI**

**SEQ ID N°14**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF  
SPLSISTALAFSLGHNNTTLTEILKGLKFNLTTETSEAEIHQSFOHLLRTLNQSSDELQLSMGN  
AMFVKEQLSLLDRFTEDAKRLYGSEAFATDFQDSAAAKKLINDYVKNNGTRGKITDLIKDLDSQT  
MMVLVNYIFFKAKWEMPFDPDTHQSRFYLSKKKWVMPMMSLHHLTIPIYFRDEELSCTVVELK  
YTGNASALFILPDQDKMEEVEAMLLPETLKRWRDSLEFREIGELYLPKFSISRDNLDILLQL  
GIEEAFTSKADLSGITGARNLAVSQVVKAVLDVFEEGTEASAATAVKITFRSALVETRTIVRF  
NRPFLMIIVPTDTQNIFFMSKVTNPKQA\*

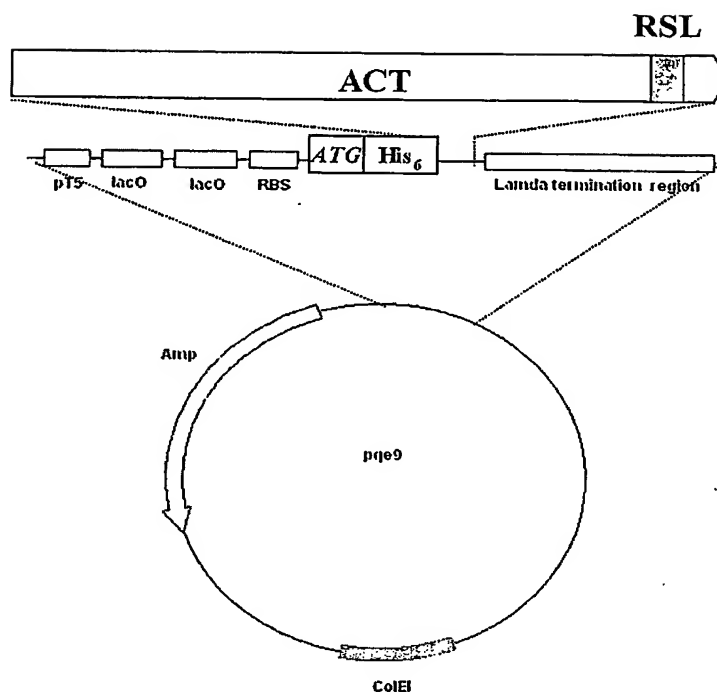
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FIG. 8

<i>Serpin</i>	<i>Sequences</i>	<i>P6</i>	<i>P5</i>	<i>P4</i>	<i>P3</i>	<i>P2</i>	<i>P1</i>	<i>P'1</i>	<i>P'2</i>	<i>P'3</i>	<i>P'4</i>	<i>P'5</i>
<b>ACT<sub>WT</sub></b>	Protein (a.a)	V	K	I	T	L	L*	S	A	L	V	E
	SEQ ID N° 15											
	DNA (codon)	GTC	AAA	ATC	ACC	CTC	CTT	TCT	GCA	TTA	GTG	GAG
<b>MD820</b>	Protein (a.a)	V	K	I	T	L	<u>R</u> *	S	<u>R</u>	<u>A</u>	V	E
	SEQ ID N° 16											
	DNA (codon)	GTC	AAA	ATC	ACC	CTC	<u>CGT</u>	TCT	<u>CGA</u>	<u>GCA</u>	GTG	GAG
<b>MD62</b>	Protein (a.a)	V	K	I	T	<u>R</u>	<u>R</u> *	S	<u>I</u>	<u>D</u>	V	E
	SEQ ID N° 17											
	DNA (codon)	GTC	AAA	ATC	ACC	<u>AGG</u>	<u>AGG</u>	TCT	<u>ATC</u>	<u>GAT</u>	GTG	GAG
<b>MD83</b>	Protein (a.a)	V	K	I	<u>R</u>	<u>G</u>	<u>R</u> *	S	<u>E</u>	L	V	E
	SEQ ID N° 18											
	DNA (codon)	GTC	AAA	ATC	<u>AGG</u>	<u>GGG</u>	<u>AGA</u>	TCT	<u>GAG</u>	TTA	GTG	GAG
<b>MD67</b>	Protein (a.a)	V	K	I	<u>K</u>	L	<u>R</u> *	<u>I</u>	<u>I</u>	L	V	E
	SEQ ID N° 19											
	DNA (codon)	GTC	AAA	ATC	<u>AAG</u>	<u>CTI</u>	<u>AGA</u>	<u>ACA</u>	<u>ACA</u>	TTA	GTG	GAG
<b>MD61</b>	Protein (a.a)	V	K	I	<u>M</u>	<u>I</u>	<u>R</u> *	S	<u>N</u>	<u>A</u>	V	E
	SEQ ID N° 20											
	DNA (codon)	GTC	AAA	ATC	<u>ATG</u>	<u>ACA</u>	<u>AGA</u>	TCT	<u>AAC</u>	<u>GCA</u>	GTG	GAG
<b>MD518</b>	Protein (a.a)	V	K	I	T	<u>E</u>	<u>R</u> *	<u>V</u>	<u>S</u>	<u>P</u>	V	E
	SEQ ID N° 21											
	DNA (codon)	GTC	AAA	ATC	ACC	<u>GAG</u>	<u>CGT</u>	<u>GTC</u>	<u>ICG</u>	<u>CCC</u>	GTG	GAG
<b>MDCI</b>	Protein (a.a)	V	K	I	T	<u>E</u>	<u>R</u> *	S	A	L	V	E
	SEQ ID N° 22											
	DNA (codon)	GTC	AAA	ATC	ACC	<u>ITI</u>	<u>AGA</u>	TCT	GCA	TTA	GTG	GAG

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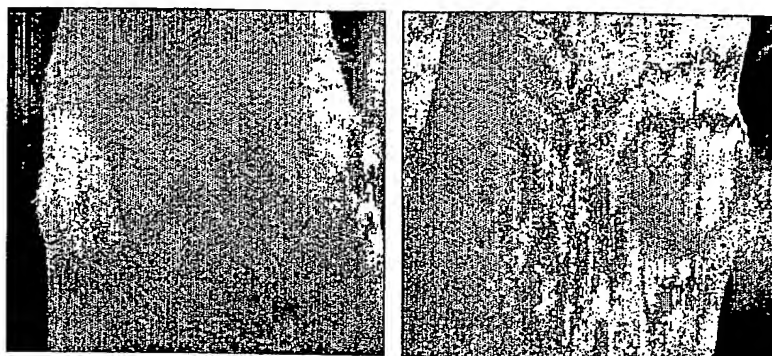
FIG. 9



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FIG. 10 A

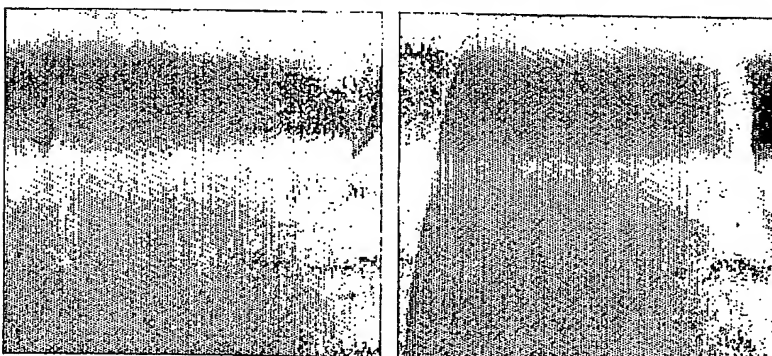
**Control**



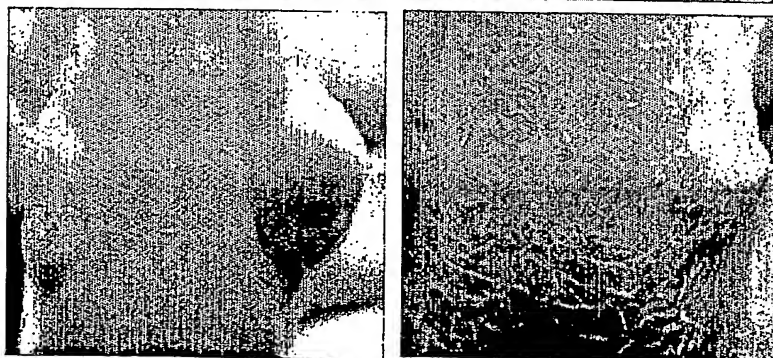
**ACT-WT (50ug)**



**MD 62 (25ug)**



**MD 62 (5ug)**



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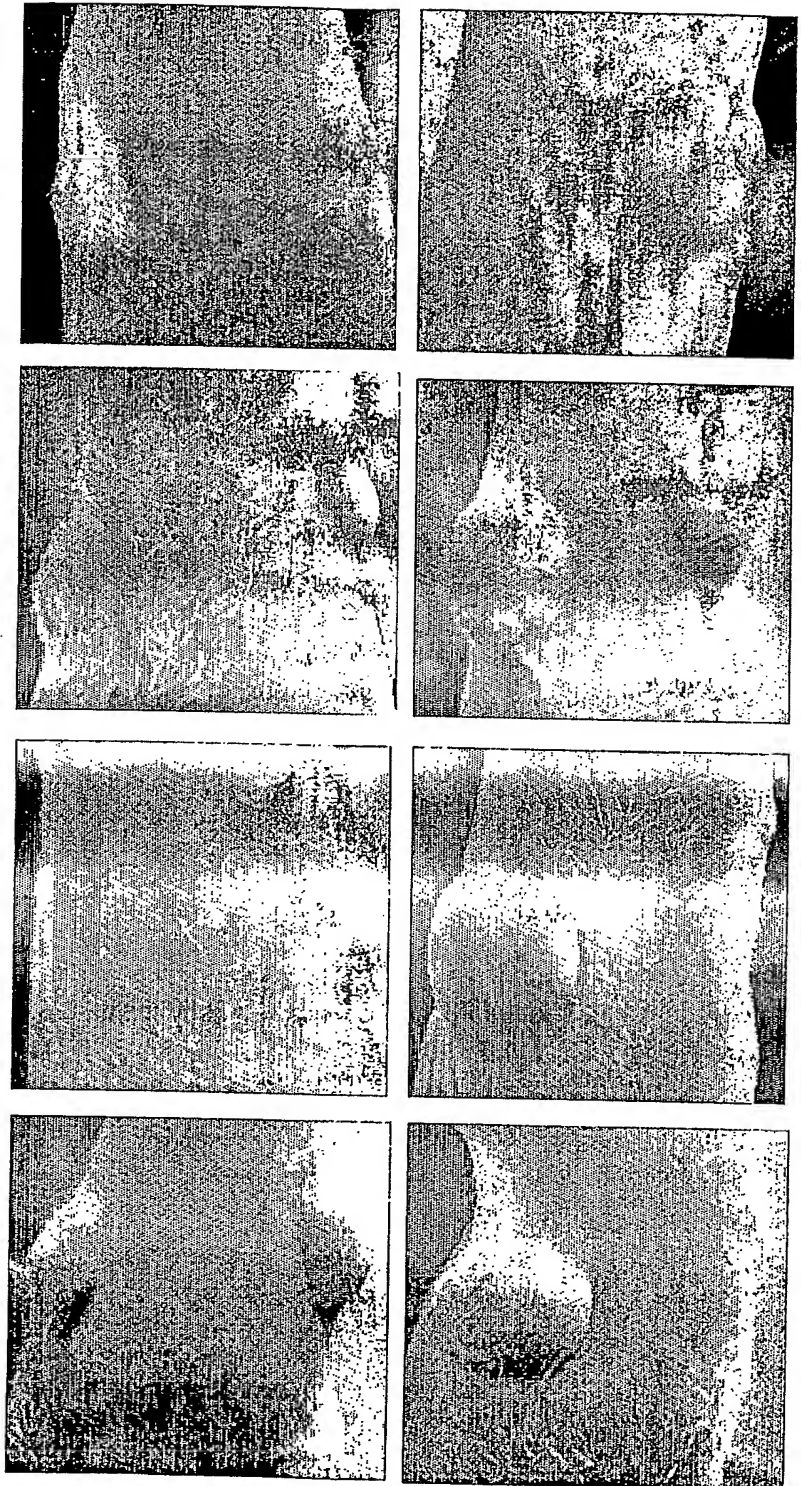
FIG. 10 B

**Control**

**ACT-WT (50ug)**

**MD 67 (25ug)**

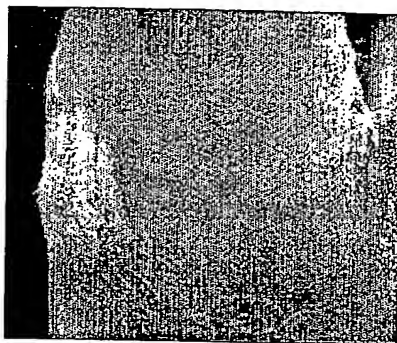
**MD 67 (5ug)**



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FIG. 11

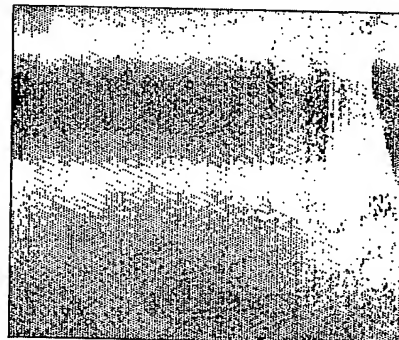
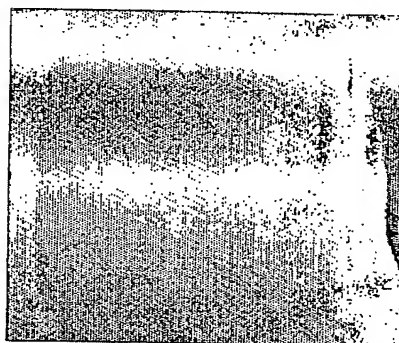
**Control**



**ACT-WT (50ug)**



**MD CI (50ug)**



**MD CI (5ug)**

